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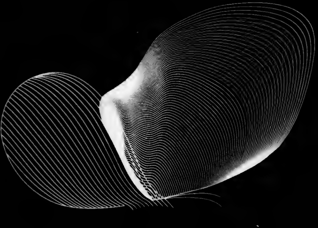

A CREATIVE *evolution*

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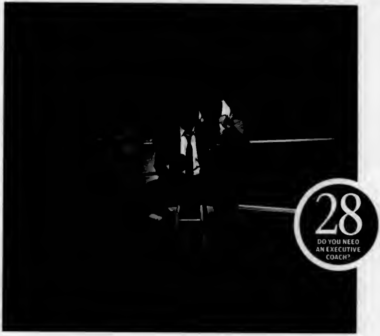
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COMSTOCK

HeadsUp

[illegible] Bienfait [illegible] with [illegible] BlackBerry [illegible]

PHOTO COURTESY RIM

SMARTPHONES

RIM CIO Aims to Reassure Unhappy Users

RESEARCH IN MOTION CIO Robin Bienfait's last name means "well done" in French. She's hoping customers will agree that those words apply to the upcoming BlackBerry 10 smartphones that Waterloo, Ontario-based RIM is due to ship in the first quarter of 2013.

"We're committed to our customers and want to see them [be] successful," Bienfait said in an interview at the recent MobileCon trade show. She said that, since April, she has talked to 180 CIOs — mostly from the U.S. — who are RIM customers. Many said that they've grown frustrated after years of using BlackBerry Enterprise Server (BES) and BlackBerry smartphones.

The outage affecting BlackBerry users on several continents for several days a year ago was a big concern of the CIOs, she said. But they also expressed frustration at the slow rollout of new smartphones, including BlackBerry 7 devices in the U.S.

While noting that U.S. enterprise customers still back RIM, Bienfait added, "We've had some missteps, including not having [BlackBerry 7] devices in the carriers' hands."

Bienfait said that she and her team have offered input about features and security for the new BlackBerries, and about BES 10, due to ship at the same time as the new phones.

As RIM's CIO, she said she focuses mostly on software service and support as they pertain to BlackBerry 10 and other products. But her job also includes oversight of BlackBerry operations, the enterprise business unit and internal RIM IT.

– Matt Hamblen

NATIONAL SECURITY

High Court Nixes Appeal of AT&T, NSA Wiretap Case

The U.S. Supreme Court has refused to overturn a lower-court decision upholding legal immunity for telecommunications companies that allegedly participated in a National Security Agency surveillance program during the last decade.

The court, without comment, declined to review a December 2011 appeals court decision upholding legal immunity for AT&T in its effort to help the NSA monitor phone calls and Internet communications following the Sept. 11, 2001, terrorist attacks.

The Electronic Frontier Foundation filed the class-action lawsuit, *Hepting v. AT&T*, in 2006. Congress in 2008 gave telecom carriers legal immunity for participating in the NSA program, and the EFF appealed a June 2009 dismissal of the case to the Ninth Circuit Court of Appeals, but the appeals court let the immunity stand.

The EFF and other civil liberties groups accused AT&T of participating in an illegal surveillance program run by the NSA. Officials of President George W. Bush's administration said the program was necessary to fight terrorism.

Meanwhile, the EFF is pursuing a related case, *Jewel v. NSA*, according to EFF legal director Cindy Cohn.

"This program hasn't been seriously considered in the courts," she said. "We look forward to rectifying that."

– GRANT GROSS, IDG NEWS SERVICE

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BETWEEN THE LINES
By John Klossner

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GOVERNMENT

Huawei Gear Is Secure, Say U.S. Providers

RESPONDING TO a congressional report warning U.S. businesses not to buy equipment from Huawei Technologies or ZTE, three U.S.-based telecommunications companies that use Huawei products said they take strong precautions to safeguard their networks.

The report, by the House Permanent Select Committee on Intelligence, said the possibility that the two Chinese companies have ties to the Chinese government raises the prospect that China is using their gear to conduct electronic espionage.

After the report was issued, three Huawei customers — Clearwire, Cricket Communications and Level 3 Communications — defended their choices.

Clearwire, an Internet service provider, said it buys some of the radios for the edge of its WiMax network from Huawei. Edge radios aren't directly connected to the core systems that manage and process traffic on the network, Clearwire said. But the carrier takes security precautions in any case.

"Among other things, we require our infrastructure vendors to submit their equipment and software to extensive testing by a leading third party recognized for vetting critical infrastructure systems," Clearwire said.

Cricket Communications, a low-cost cellular carrier, acknowledged that Huawei is one of its vendors. However, it said that the majority of its network is not built with Huawei equipment and that it has systems in place to monitor its network and identify intrusions.

Level 3, a global wired backbone provider, declined to comment on Huawei in particular but said it has an extensive security system.

The Chinese government slammed the congressional report. Commerce Ministry spokesman Shen Danyang said in a statement that the report "was based on subjective suspicions and inaccuracies" and made "groundless accusations against China."

– Stephen Lawson with Michael Kan, both of the IDG News Service

Micro Burst

Accounting firm McGladrey has rolled out

6,500 tablets

to its staff to improve efficiency and give employees a "sense of empowerment."

INTERNET

Enterprise Tools Added to Google Search Appliance

Google upgraded its Search Appliance for the enterprise to help workers find information stored anywhere in their organizations.

Google Search Appliance 7.0, which went on sale Oct. 16, is designed to allow administrators to add information from the cloud, social networking sites, secure storage sites on the Web, and Microsoft SharePoint 2010 files. It works with PCs, tablets and smartphones.

Among other improvements, "we've refined our relevance signals," said Matthew Eichner, general manager of Enterprise Search at Google, in a blog post. "Entity Recognition automatically identifies and suggests content you might be looking for," he noted, adding that GSA 7.0 also allows employees to add their own search results.

A new document preview feature allows users to see thumbnails and full-screen document previews alongside their search results.

IDC analyst David Schubmehl said users would like enterprise searches to be as easy as Web searches, noting that slow searches can hurt productivity. A 2009 IDC study found that the time spent searching for data averaged 8.8 hours per week per employee, at a cost of $14,209 per worker per year.

– SHARON GAUDIN

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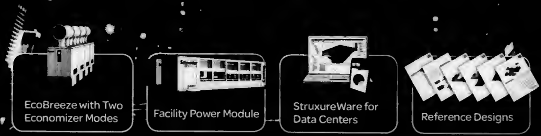
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Cynthia McKenzie of Fox and Tom Soderstrom of NASA's Jet Propulsion Laboratory discuss working with startups with panel moderator Matt Marshall (left) at Demo Fall 2012.

Startups Are Worth The Risk, IT Execs Say

IT leaders must acknowledge and manage the risks of working with startup tech vendors – and set reasonable expectations. By Johanna Ambrosio

INFORMATION TECHNOLOGY PROFESSIONALS say companies can gain a competitive advantage by buying products and services from startup tech vendors, but they stress that doing business with a young company involves risks.

If CIOs choose to partner with startups, they must acknowledge that risk, have a plan to manage it and keep their expectations reasonable, said IT executives at the Demo Fall 2012 conference in Santa Clara, Calif., earlier this month.

"I love startups, but you have to look at what you're doing and understand who you're working with," said Cynthia McKenzie, senior vice president of enterprise application services at Fox Entertainment Group, in an interview at the conference. "I've had issues with startups going out of business. At one, the founder of the company died and they walked away from us."

Fox has also had to deal with startups being acquired — and with new owners retiring the products that Fox was using, said McKenzie.

Sasan Goodarzi, CIO of Intuit, said his company "[looks] at the startup's technology, the [needs] we have internally and whether it will be a cultural fit. But you just have to lean forward and play offense. Be thoughtful and manage risk, but don't spend too much time on it."

Tom Soderstrom, CTO at NASA's Jet Propulsion Laboratory, said startups can provide access to leading-edge technology with the potential to solve business problems more quickly than internal developers can.

"You can go to a startup and see how we'll be doing IT in two years," he said.

However, McKenzie warned that IT executives should "do due diligence" if they're hoping to use a startup's technology to get to market faster.

"There are a lot of things they may not know how to do — a contract, for example," she said. "Everything can be more cumbersome" because it's uncharted territory for a new company. A lack of formal processes may be among the characteristics that make startups so nimble, but most larger organizations require such processes, she noted.

Even so, McKenzie said, the risk of working with startups has been worth the reward for Fox.

Soderstrom said IT leaders may find that they need to give startup personnel guidance on how best to work with their companies.

"I can't tell you how many times I get an email saying, 'I'd like to show you my product — are you free for an hour next week?' " he said. "There's no way I can do that. I'm already triple-booked."

Soderstrom said a better approach, for him anyway, is for the vendor to request a 15-minute Skype video chat session.

IT leaders participating in panel discussions at Demo said they are especially interested in working with startups in the emerging big data market.

> **I love startups,** but you have to look at what you're doing and understand who you're working with

Ricardo Angel, senior vice president of General Electric Energy Financial Services, said his company wants to mine data to learn how to use mobile devices to maintain IT equipment, especially in locations "where it's difficult for people to go."

Fox is also using big data tools — including sentiment analysis and Hadoop products — as it launches an initiative to track the studio's top 5,000 customers, McKenzie said. ◆

IDG NEWS SERVICE

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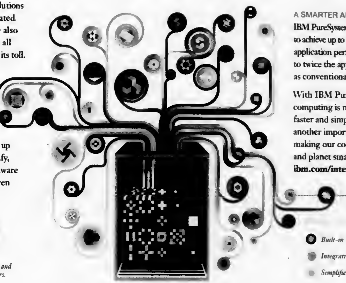

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[1] Based on a 2011 commissioned study conducted by Forrester Consulting on behalf of IBM. [2] Based upon testing of the IBM PureApplication System [illegible] measured from powering on the system [illegible] application deployments and based upon testing of the IBM PureFlex System Express & Standard [illegible] and one compute node with the time measured from powering on the system to when [illegible] image deployment. [2] Up to 2X application density based upon simulation of [illegible] applications on an IBM Flex System [illegible] Compute Node as compared to a previous generation IBM system. The IBM Flex System [illegible] Compute Node is available in IBM PureFlex System and IBM PureApplication System. Up to 2X performance of business applications based upon testing of IBM Storwize [illegible] Easy Tier [illegible] generation IBM system. IBM Storwize V7000 is included in IBM PureFlex System and IBM PureApplication System. IBM, the IBM logo, ibm.com, PureSystems, Smarter Planet and the planet icon are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. A current list of IBM trademarks is available on the Web at www.ibm.com/legal/copytrade.shtml. © International Business Machines Corporation 2012.

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Help Desk, Rebooted

Today's device-toting workers look for tech support wherever they can find it, but a help desk is still the best bet for fixing enterprise apps. By Todd R. Weiss

WHEN TROUBLESHOOTING computer problems, enterprise workers have long turned to their office mates for help before taking the time to file a formal request for support from the help desk. But the rise of social media, employee mobility, cloud computing and the consumerization of IT have amplified that trend, leading research firm Gartner to predict the "possible end to the traditional help desk."

"Users are crowdsourcing," said Jarod Greene, an analyst at Gartner, which last summer included the potential demise of the help desk in a list of 10 predictions for the IT industry. The firm said people will bypass the help desk and seek answers from co-workers and friends via social media, or they will search for answers themselves on the Web.

"We call it 'Hey, Joe!' support," Greene said. "It's not about opening a help ticket or closing the ticket. It's 'I just need to know how to use this better.' That 'log it and flog it, detect and fix' [help desk] model is dying."

While tech support veterans acknowledge that the help desk is rapidly changing, they also contend that reports of its death are exaggerated.

Franz Fruewald, CIO at the Archdiocese of Philadelphia, says most users still call a traditional IT help desk with tech problems. "That has not changed, and I don't see that changing," he said. "Even if things do change, the help desk won't go away entirely. Definitely not."

The archdiocese maintains a help desk staff of nine to serve 125 locations housing a diverse group of some 3,000 users, including teachers, healthcare professionals and cemetery workers.

To be sure, help desks have refined their missions, IT executives say.

In many cases, the process of responding to the most common inquiries — questions about changing passwords or fixing paper jams, for example — has been automated. That gives tech support personnel more time to focus on more serious problems, such as network outages and malware attacks.

Bill Benoist, vice president of information services at Calabasas, Calif.-based real estate company Marcus & Millichap, predicted that help desks will continue to play an important role in enterprise IT for some time because many organizations use complex homegrown applications.

"There is no way you can use Google [for problems with custom software] because those applications don't exist except in-house," said Benoist.

The Marcus & Millichap IT shop supports 2,000 people who "are not in the technology field; they're in real estate," said Benoist. "Many of our calls are application-specific and involve user education and training rather than troubleshooting."

He noted that help desk calls are declining, but the decrease is mostly due to improvements in hardware, operating systems and virus protection tools.

Michelle Garvey, CIO at New York-based clothing wholesaler and retailer Warnaco, adds that crowdsourcing isn't likely to help users who have trouble with SAP or Oracle applications, because "those problems are very situation-dependent."

IDC analyst Rob Brothers said there may be fewer people manning help desks in the coming years, but the function will remain critical for a while. "We have no idea about the myriad issues that will arise in the next five years," Brothers said. ◆

Weiss *is a freelance writer.*

'log it and flog it, detect and fix'

HEMERA

THE Grill

Hugh Scott

This utility firm CIO made a quick decision to take his business into the cloud.

Family: Married with 9-year-old twins (a boy and a girl)

Hometown: Largs, Scotland

Years in the U.S.: 11

Best time-management tip: "Manage a to-do list, and be selfish about your time when you need to be."

Favorite way to spend downtime: "I try to spend time with the kids. I try to exercise, ride my bike. One of the good things about moving from Houston to Philadelphia: There are plenty of little hills around here."

Favorite tech toy for personal use: I use my iPad for everything. But I'm going to go check on the iPhone 5.

CIO HUGH SCOTT *decided to move to the cloud just a few months after joining Energy Plus Holdings, in January 2011. His quick decision highlights the fast pace of IT today and illustrates how important it is for new CIOs to hit the ground running. To date, Scott has expanded his IT team from 25 to 50 people and moved core applications to the cloud using SunGard Availability Services. He has also brought his own management style to his new role at Philadelphia-based Energy Plus, a fast-growing online energy services company with 185,000 customers in eight states. Here, he talks about what it takes to move into a new leadership position and carry IT operations forward.*

What was your strategy for a successful transition into your new role? I had a rough 100-day plan, and at the top of my list was to establish a working relationship with my peers and counterparts, to get myself out there and understand their business and their pain points and problems, and really understand what they were looking for from a

I'd much rather work with someone who is willing and able and prepared to work beside you to get the problem solved.

technology and operations standpoint. Goal No. 2 was to get my head around the capabilities of the team. You inherit a team, and it's easy to do nothing or get rid of everyone and start from scratch. But the reality is you probably want to do something between those two, and it's difficult to find out what the right team is for the job.

And the third thing I wanted to do, I had to figure out who were our strategic partners in the vendor community. I spent time meeting as many of our vendors as possible and trying to formulate who I wanted to do business with and who was going to be a distraction. And I synthesized those three things into a plan.

What was the biggest challenge you faced as you moved into the position? Energy Plus had been looking to fill this position for a period of time. They deliberately delayed making decisions until I started. So you walk through the doors and find yourself having to make quick decisions without having the luxury of finding out all the facts first.

How did you handle that? [I went] with my instincts. That's where experience kicks in. It's not blind instincts, but you've got to go with, "This is something I dealt with before, and this is how it worked out." Sometimes you get it right, and sometimes you don't.

Why did you move to cloud computing? One of the things I had to decide on was new hardware. I had a purchase order for [$500,000]. I looked at that and asked, "Why are we doing this?" And one thing I was conscious of when I looked at the talents of the team was we didn't have any bench strength from the perspective of technology operations, as in the infrastructure. Cloud was the buzz at that particular moment, so it was advantageous to use from a staffing standpoint. And the big business problem I identified was that we had to build a very scalable platform very quickly. We're growing very rapidly, and my job as CIO is to provide a platform that will scale with our business, and I saw leveraging the cloud was a solution to a number of our challenges.

You say cloud computing requires a shift in mindset. What do you mean by that? You find this through adversity. We had challenges with our initial deployment. I was talking about some of the challenges, and people were keen to remind me that it was my decision to deploy our website to the cloud. It's tempting to point fingers and blame your partner, [but] my experience is that that might make you feel good in the short term but it doesn't solve the problem. I'd much rather work with someone who is willing and able and prepared to work beside you to get the problem solved, and the way to do that is to build up a partnership and not beat someone up.

What problems did you encounter? We had outages. Six or eight weeks into the deployment, I got a call on a Saturday that the website was down for 10 minutes. That's 10 minutes we're not taking enrollments. We automatically assumed it was SunGard, because that was the variable that changed. And SunGard was really fantastic about working with us. It turned out that when we were deploying, we inadvertently deployed some malware. It was something we did to ourselves, and the reason I talk about partnership is that SunGard did a stellar job working with us and they actually found the problem. I believe if I yelled and screamed at them from the top of my voice, they'd be less motivated to do that.

What benefits did cloud computing provide for your organization? Scale. It's really the ability to scale quickly. I know a lot of people talk about saving money — and, yeah, it could be more cost-competitive over the medium to long term, and that is important — but to me, it's about scale.

How do you build your team? Table stakes in a technology organization is understanding technology. So there are some fundamental skills you have to have. If you assume that everyone you talk to has those skills, the added value that you look for when you hire are people who are savvy, are interested in the business — interested in Energy Plus — and are able and capable of interacting with people outside their sphere of expertise. If you bring those people on, then you have to articulate a clear vision and clear goals within that vision. I think people respond very well to that direction. Then you let them get on with it. People rise to the challenge.

— Interview by Computerworld *contributing writer* **Mary K. Pratt** *(marykpratt@verizon.net)*

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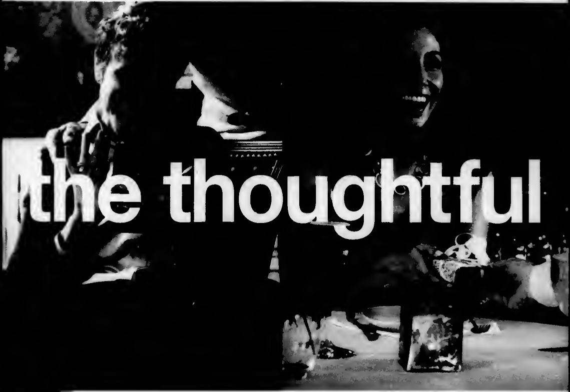

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OPINION

THORNTON A. MAY

Three Questions Every CIO Must Answer

What business is IT in today, what business should it be in tomorrow, and what should the 'I' in 'CIO' signify?

THE MOST IMPORTANT STRATEGIC QUESTION that organizations can ask themselves is "What business are we in?" according to the formulation of revered *Harvard Business Review* editor Ted Levitt. Lacking the succinctness of the late professor, I see *three* strategic questions that successful next-generation CIOs must answer.

■ What business is IT in today?

Over the past two months, I asked this of hundreds of CIOs in facilitated workshops on three continents. In freewheeling discussions, CIOs often opined that "IT is in *every* business." This "bits are everywhere" idea reflects a prevalent macro trend in which all things are being digitized. That thought also contributed to a frequently heard lament: "We are in the always-behind business." That many IT executives feel this way is a byproduct of another macro trend: the ever-accelerating pace of change and users' lack of patience. That source of frustration naturally led to just about every CIO I spoke with wanting to get out of the "do more with less" business.

But does any of this top-of-mind venting answer the actual question? To better determine what business IT is in today, we added more granularity to the question, asking where IT is actually spending its time and resources. From that, we got this interesting Global 2000 result: 61% of the respondents said that they are in a combination of the "infrastructure business" (that is, keeping the lights on) and the "integration business" (gluing together various stovepipe legacy systems so they can interoperate on a semi-non-toxic basis).

■ What business should IT be in tomorrow?

You'd be hard pressed, though, to find anyone who believes that infrastructure and integration should be IT's sole focus in the future. What I see is a consensus that IT will play a more significant role in the future. Kevin Turner, Microsoft's chief operating officer, nails the zeitgeist by portraying the CIO evolutionary path as moving from technology piece-part management, through transforming the IT environment, to enabling business excellence, and finally coming to rest at "strategic business leadership."

But what exactly does that mean?

It means that IT is no longer just in the business of compliance, cost reduction, project delivery and device provisioning. It means that IT should essay mightily to get out of the "apologizing for old, uncool and irrelevant systems" business. Instead, it should position itself as being in the "creating and preventing strategic surprise" business.

IT is not just in the "we can do better" business. It is in the "we can do things previously thought impossible" business.

■ What should the "I" in "CIO" signify?

Because many IT shops feel forced to follow what might be the motto of the Nancy Reagan School of Technology Management ("Just say no!"), the "I" in "CIO" often seems to stand for "insignificant," "irrelevant," "invisible" or "in the way."

In workshops, we asked technology executives what they wanted the "I" to signify. The answers included "imagination," "income," "intelligence," "investment," "inspiration" and "innovation."

Looking to the future, then, what IT needs to do is to balance its current focus on infrastructure and integration with a new reputation for inspiration and innovation. ◆

Thornton A. May is author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College in Jacksonville. You can contact him at thorntonamay@aol.com or follow him on Twitter (@deanitla).

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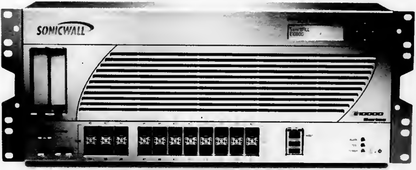

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AS COMPUTERWORLD CELEBRATES
ITS *45th anniversary,* [illegible]
AND IT'S [illegible]
OVER DECADES OF CHANGE THAT
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BY MICHAEL FITZGERALD

A CREATIVE *evo*LUTI*on*

HOW DIFFERENT is the world of computing now from when the first issue of *Computerworld* rolled off the presses in 1967?

Here's a glimpse: One day around that time, Edward Glaser, chairman of computer science at Case Western Reserve University, was giving some of his students a tour of the rooms that held the school's Univac 1107. As he stood in front of the computer's flashing lights, the sound of tape spinning in the background, Glaser said, "By the time you're my age, maybe 20 years from now, you'll be able to hold all this computing

BRIAN STAUFFER ILLUSTRATION

power in something the size of a book."

His students weren't impressed. "I remember us thinking, 'This guy is nuts,'" says Sheldon Laube, who recently retired as CIO of PricewaterhouseCoopers. Yet Glaser was, in fact, off by only a few years and several orders of magnitude in predicting the debut and the processing power of notebook computers.

Today, of course, the iPhone in Laube's pocket can do things that would overwhelm a Univac 1107 or any other multimillion-dollar computing behemoth of that era.

Thanks to the miniaturization of hardware, advances in storage processing, vast improvements in software and the proliferation of high-speed networks, computing now belongs to the people.

Over the past 45 years, "the overarching trend is consumerization," says technology pundit Esther Dyson, chairwoman of EDventure Holdings, an investment firm. The IT leaders who read *Computerworld* "used to own all the computers, and now [their] customers do."

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RICHTER FRANK JURGEN

This brings one practical change, she notes: more technology choices for users, who have always wanted access to information via any device and any operating system, and now expect it.

For IT, it creates a new master: "Your 3-year-old kid can do things with your cellphone you can't," says Suren Gupta, executive vice president of technology and operations at Allstate. "[IT] better be on that curve. Kids and consumers are learning technology much faster, and we need to make sure we adapt our products to reflect that."

Technologies are created to improve life. Corporations use technologies to become more efficient and improve their ability to give customers what they want. Some corporations — those with foresight and flexibility — use it to create entirely new ways of doing things.

Without a doubt, high tech has reshaped the world in the past 45 years. The most visible example comes from the smart devices that millions of us keep within easy reach. Personal digital assistants, indeed — cellphones and tablets extend our beings into a realm no less real for being virtual.

But it wasn't always this way.

Riding Moore's Law

"My father was working on computer programming and technology back in the '50s. He would come home and say, 'This is the hardest thing I've ever done. Whatever you do, stay away from these things,'" recalls Ray Lane, a managing partner at Kleiner Perkins Caufield & Byers, a Silicon Valley venture capital firm. Lane didn't listen to his father. After graduating from college, he became a systems analyst at IBM (he also did systems work in the military during the Vietnam War). By the early 1970s, he could write code in a formal language like Fortran ("Cobol was kind of for sissies," he says), submit a deck of punch cards and 24 hours later find out what mistakes he'd made.

Thanks to the relentless pace of Moore's Law, which posits that the number of transistors that can be put on a semiconductor will double every 18 months, the kind of computing power once available only to those who worked in austere information temples is now available in the palm of one's hand, says Lane. And today, those temples — or data centers, as they're now known — all look more or less the same: They're made of servers with Intel chips inside, and they boast vast storage resources. We connect to them from anywhere, ultimately through the Internet's protocol, TCP/IP.

Chris Perretta, CIO at State Street, remembers that he had to drop a microprocessor lab class when he was an engineering student in the late 1970s because he fried a CPU — it was too expensive for him to get a second one. "People get mad now when [technology] breaks, and I'm amazed that it works ever!" he jokes. At this point, Perretta says, "we can build systems with basically infinite computing capacity and access to an incredible amount of data."

Connected, All the Time

That we can access that data from almost anywhere is a given now, but iconic personal computers like the IBM PC came without any networking capabilities, though the Internet was more than a decade old at the time. People wanted to link those systems together, and one way they did it was through Ethernet, which was co-invented by Bob Metcalfe, founder of 3Com and a former publisher of *Computerworld* sister publication *InfoWorld* who is now teaching at the University of Texas at Austin and working as a venture capitalist at Polaris Ventures. "Let's say the Internet was born in 1969," says Metcalfe via email. "It has changed everything, and not only in computing. IBM used to run computing, and AT&T used to run communication. The Internet changed all that by 1985, [breaking up] the monopolies with open industry networking standards for PCs and networking, mainly HTML, HTTP, URL, TCP/IP, Ethernet."

The monopolies may be gone, but it wasn't until the past few years that nearly ubiquitous high-speed wireless Internet access became a given. "A few years ago, when you went to conference, you sat in the front row because you were looking for a jack. Now the jack is pervasively around you," says Robert B. Carter, CIO at FedEx. In just the past few weeks, Carter was in Malaysia, Vietnam, Europe, India, Hong Kong and Singapore. "Never did I wonder how I was going to get a connection," he says.

High-speed, inexpensive, generally available connections have made it easier for the masses to get access to information. They have also helped make technology usage widespread, even second nature. And these developments have led to entirely new demands on IT, moving it from a caretaker and guardian of systems to an enabler of new ways of doing business.

24/7 Data Deluge

Take healthcare, for example. Today, "you can access on your mobile phone your patient record, your lab results, connect to a doctor and make an appointment in a matter of minutes," says Philip Fasano, CIO at health insurer Kaiser Permanente. Don't have a smartphone? You can do all that by voice or on a PC, too.

On the other hand, FedEx's Carter says, "I have a teenage daughter who manages to run out of unlimited texting. How do you do that? The math says she sends or receives a text every eight minutes, 7 by 24." Parental conundrums aside, he says his daughter's data usage illustrates one of the major IT issues of the day: "How do you [comb] through that much data and make it useful to a business like FedEx?"

He's not the only one asking that question. "At the time I started working, I couldn't have imagined we would ever deal with gigabytes of data," says Gupta. "At Allstate, we've got almost 3 petabytes of data about different things we do with customers." He says customers now expect just-in-time information, which means Allstate IT needs to make it possible to instantly sort through those petabytes of data and zip an answer back to the user, no matter what platform is used.

When it comes to expectations, the bar will only be set higher with the arrival of systems like IBM's Watson, the Jeopardy-playing computer. "Exponential growth in computer resources [allowed] us to get to things like IBM's Watson computer," says Fasano. "We're on the cusp of being able to get machines to think as quickly as we do."

That's a huge jump in artificial intelligence. Fasano says organizations will make the same jump in what they "know" and can deliver to customers. For healthcare companies like Kaiser Permanente, he says, the combination of big data and big math will make it possible to develop algorithms for predictive analytics that support truly personalized medical care.

What Solow Paradox?

IT advances, of course, go through phases of wheel-spinning as they get absorbed, and big data is no different. Now, though, nobody doubts that big data will make us more productive. But it took a while for technology in general to deliver a productivity payback.

Ian S. Patterson, CIO at Scottrade in St. Louis, started his career in 1981 as a purchasing manager for a now-defunct 32-store musical instrument retailer. To check inventory, "we'd call the stores on a weekly basis and go through what we knew were hot items and say 'How many do you have left?' " Patterson says. Things improved a little after the chain moved from manual cash registers to IBM's electronic registers. Still, Patterson wanted daily sales reports, but what he got took a weekend and a batch process. He got so fed up that he went back to school and got a degree in MIS.

There were, of course, early groundbreaking applications, such as American Airlines' automated reservation system in 1960, which some have called the first real-time application, and American Hospital Supply's ASAP ordering system, launched in 1976 to allow hospital managers to place orders themselves. And there was Merrill Lynch's 1977 money market sweeper, which automatically pulled available funds to and from money market accounts and included a credit card and check writing, and a Walmart/Procter & Gamble partnership that in 1988 produced a "continuous" replenishment supply chain.

"Those were iconic, charismatic information systems that rendered the competition irrelevant," says futurist and *Computerworld* columnist Thornton A. May. "Some of us said, 'These are not rare or isolated or strange. IT is by definition a marketplace solvent. IT changes things.' "

CIOs

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CIOs HIT MIDDLE AGE

Birthdays mean cake and presents and being the center of attention. But as we age, those birthday milestones cause introspection

Forty-five years after the launch of *Computerworld*, computing is in fabulous shape. CIOs, however, are in the midst of a midlife crisis, and trying hard to keep pace with society's fervent embrace of technology.

While CIOs were rare 45 years ago, now their contributions and influence can't be missed. But what stymies CIOs in this day and age? Hackers, for one. Viruses used to be biological, not technical, and hackers were hobbyists, not well-organized fraudsters. Another problem is the skills gap. IT skills used to be a ticket to a secure career. Now, technology and expectations change so rapidly that even in a tech-savvy society, it's hard to find the right people or even know what training to give them.

In five years, when *Computerworld* will be celebrating its 50th anniversary, the role of the CIO will have changed again, and this time, expect it to be even more deeply integrated into most facets of the business.

MICHAEL FITZGERALD

Cloud Computing

The Autonomics behind the Economics

In recent years, cloud computing has moved from the fringe to the mainstream of enterprise IT practice. The adoption of this flexible, service-based approach to computing has been catalyzed in large part by the promise of improvements in IT efficiency and reductions in data center expenses. But, too often, CIOs and financial managers fail to understand the critical role application servers play in realizing cloud computing's economic and operational potential.

The dynamic, virtualized and highly utilized infrastructure which is characteristic of the best cloud environments requires a foundation of powerful, intelligent, cost-effective servers. Ideally, these servers will automate many once-manual IT operations, driving significant improvements in total cost of ownership (TCO) and performance.

> Ideally, these servers will automate many once-manual IT operations, leading to significant improvements in cloud computing TCO and performance.

Intelligence and autonomics remove costs

Application servers that require laborious manual intervention for provisioning, health monitoring, firmware and software updating, and other routine tasks can seriously undermine the value of cloud computing. Whether the cloud environment is private, public, or a combination of the two, it can benefit not just from task automation but also from autonomics. "With autonomies, the server not only gathers information, but proactively does something with that information," explains Tim Golden, resident chief technology officer for Hewlett-Packard's (HP's) Americas Industry Standard Server Business.

Whether it involves "phoning home" to service professionals to alert them to potential component failures, or automatically identifying and correcting multi-bit memory errors, proactive autonomics can greatly lessen cloud TCO, improve performance, and maximize uptime. From an economic perspective, intelligent automated servers can drastically cut administrative and maintenance costs; reduce energy usage by ensuring servers run as efficiently as possible; and minimize the potentially astronomical costs of downtime by addressing problems before they result in catastrophic failures.

These and other TCO-reduction benefits are ultimately much more impactful to corporate bottom lines than are the relatively simplistic return-on-investment (ROI) analyses that traditionally have served as the primary economic evaluation factor for application servers.

Next-gen servers reduce costs

HP designed its latest generation of rack and blade servers—the HP ProLiant Gen8 portfolio—in large part to address the needs of virtualized cloud computing and other high-demand IT environments. The HP ProLiant Gen8 servers deliver more than 150 new features compared to earlier-generation servers, including many that leverage the servers' embedded intelligence, self-analysis, and proactive autonomics capabilities. Among the HP servers' TCO-reducing, performance-enhancing features:

- An embedded Active Health System that continuously tracks, logs and time stamps 1,600 system parameters and offers phone-home capabilities to both prevent failures and speed recovery times
- Monitoring for and, when possible, automatically correcting multi-bit memory errors on the fly without interrupting service
- Proactive identification of failing drives and automatic creation of a hot spare

Thanks to these (and dozens more) automation and efficiency capabilities, "the HP ProLiant Gen8 servers can be critical in helping CIOs achieve the optimal economic—as well as operational—benefits possible with cloud computing," says Golden. ■

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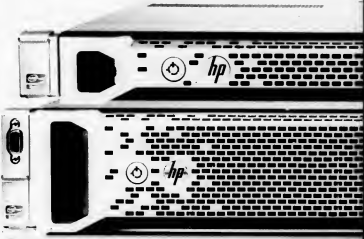

intel inside Xeon

HP ProLiant DL360p Gen8 servers and HP ProLiant DL380p Gen8 servers powered by the Intel® Xeon® processor E5-2600 series

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But IT doesn't change things overnight, or by magic. For every iconic IT project, there were dozens that didn't work out. That led to a lot of spending that didn't yield improved productivity — an "emperor's new clothes" paradox noted by Nobel Prize-winning economist Robert Solow, who in 1987 said, "You can see the computer age everywhere but in the productivity statistics." Time brought change, such as Michael Hammer's re-engineering revolution in the 1990s, and technology finally started driving productivity improvements, ending the Solow Paradox.

Patterson would be much happier as a purchasing manager today. "You're getting to the point where once I hit point of sale, I'm pretty much at real-time update," he says. "In the future, it's going to [update] once I pull it off the shelf or put it in the cart. They're going to know when I walk up to the register, and I'm going to get my receipt."

If more and more of what you do as an IT department becomes commodity, what does technology enable you to do that's unique to your business?

INGO ELFERING, VP OF BUSINESS TRANSFORMATION, GLAXOSMITHKLINE

COURTESY OF GSK

Interfaces Get Personal

Retailers and other companies might also be able to know what you're looking for based on patterns you display when shopping and searching. Scottrade is working on developing algorithms that will help it create the same conversational service environment for online customers that exists in its retail operations.

Right now, Patterson says, Scottrade doesn't have a way to find out if people visiting its website want information on opening an account because they want to save money for retirement or for their kids to go to college. A salesperson could get that information in person by simply asking a question, and Scottrade's website will be able to do that in the future, he says.

And one day, computers might literally ask us such questions — by speaking to us and expecting a spoken response, not by having us type words on a screen. We don't use punch cards anymore, and we might be seeing the end of the keyboard era as well.

Today, "kids go to their computer and put their hand on the screen and try to move stuff around," Laube says, noting that he thinks voice will soon be the primary interface. "That's what Nuance just announced, building Siri into corporate apps. How cool is that?"

But voice interfaces may not work so well, says Ingo Elfering, vice president of business transformation for GlaxoSmithKline's Core Business Services unit. A native of Germany, Elfering finds that voice interfaces struggle with European accents and also fail to recognize some U.S. accents. He thinks the keyboard will remain a dominant interface, as it was with the Commodore VC 20 he purchased in 1980.

However, Elfering thinks the success of the iPad spells the end of paper. Companies will "try to get much more digital and take out the paper. We'll replace paper with computers that manage processes."

And in a few years, those computers will manage processes via 3D displays, says Allstate's Gupta, which means yet another technology for CIOs to manage.

Next-Gen CIOs

The CIOs of tomorrow will resemble today's CIOs about as much as current CIOs resemble the old heads of MIS departments. That's due in part to the fact that technology is now an everyday commodity — a development that has led to the consumerization of IT in the enterprise.

Elfering says that when people have more powerful computing setups at home than they do at work, IT must confront this fundamental question: "If more and more of what you do as an IT department becomes commodity, what does technology enable you to do that's unique to your business?"

He says the answer varies by industry and even by company, but one thing holds true everywhere: "IT is much, much more complex and much harder to manage."

Some of that difficulty is due to the fact that users know a lot more about IT than they once did, and they expect more from their systems. But it's also because "nowadays, you have all these complicated layers — everything from SAP to Hadoop clusters to virtualized desktops to Windows and Office, to complex clusters and Web-based systems," Elfering says.

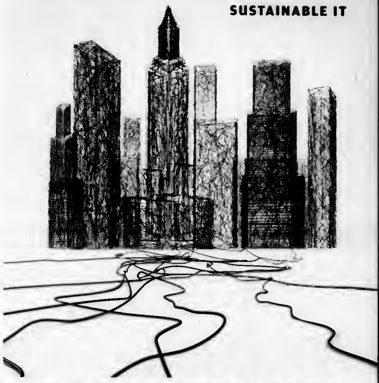
Such a maelstrom of expectations and technology makes for turbulent times for CIOs. May puts it bluntly: CIOs need to become creative artists.

Today's Fortune 500 CIOs represent the last survivors "of the ERP death march," he says. While an ERP deployment is "an amazing feat of character and stamina," it isn't an act of creativity, May notes, suggesting that people who can build ERP systems have the wrong skills for a world where IT means the cloud, big data, social networks and mobile.

That's probably true, says State Street's Perretta. "When I started, you would steal stuff from work to play with at home, and now you steal it from home to play with at work," he says. Working in IT used to be about understanding technology. Now, he says, "it's more about what problem you're going to solve."

Given this shift, Perretta sees another trend that IT leaders might find hard to accept: "I suspect the tenure of CIOs will continue to decrease." ◆

Fitzgerald *is a freelance writer based outside of Boston.*



SMART BUILDINGS GET SMARTER

Thanks to integrated architectures, IT-driven building designs are minimizing energy consumption while optimizing operations.

BY ROBERT L. MITCHELL

BEHIND THE GLITTERING, SCULPTED GLASS SKIN of the San Francisco Public Utilities Commission's new 13-story headquarters beats the heart of one of the most energy-efficient office buildings in the world.

IT makes it tick.

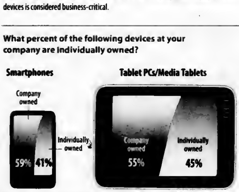
The office tower, a smart building that opened in June, features many state-of-the-art green technologies, including solar panels and wind turbines that supply up to 7% of its energy needs. "Our goal was to save rate payers money and to educate them about energy efficiency," says program manager Masoud Vafaei. A LEED Platinum candidate, the building uses 32% less energy than similar structures with conventional designs. Like many smart buildings, the SFPUC headquarters uses computer technology to manage and optimize the many systems that control every aspect of the building's operation. But much of the day-to-day efficiency gains are derived from a central

MIGUEL NAVARRO / GETTY IMAGES

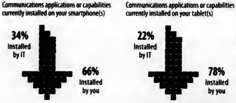
How to Lead the Device Independence Revolution

THE REBEL ALLIANCE IS ALIVE AND WELL and bringing its own devices to work. A *Computerworld* QuickPoll survey conducted by IDG Research Services found that approximately four in 10 smartphone and tablet devices in the enterprise are owned by individual users. And they're not just playing Words with Friends: A substantial portion of applications stored on both company- and employee-owned devices is considered business-critical.

What percent of the following devices at your company are individually owned?



What percent of the advanced communications applications and/or capabilities currently installed on your work-related mobile devices were installed by your IT department?



Source: IDG Research Services, May 2012

Employers have attempted to counter the bring-your-own-device (BYOD) crowd by deploying their own authorized smartphones and tablet computers, hoping to add a much-needed layer of data security to rein in newly empowered employees. For technology decision-makers, enterprise security is the most important element of an advanced communications strategy. However, to accommodate the BYOD movement, they'll need to address the flashpoint between do-it-yourselfers and enterprise security.

"Trying to satisfy two audiences is never easy," said Bill Versen, director of mobility solutions at Verizon Wireless. "End users want the same flexibility in the workplace that they have with their personal communications. Enterprise IT has to protect a business's proprietary information. Both sides want the same thing — easier access to applications and information — but IT's job is to mitigate the risk."

To develop a BYOD strategy that provides the proper blend of end-user freedom, enterprise security, and corporate governance, IT organizations should consider four emerging best practices: user segmentation, device segmentation, device flexibility, and clearly articulated BYOD policies.

IT organizations that can find ways to enable BYOD securely — without sacrificing end-user flexibility — will deliver significant value to the business. Allowing employees to use their own devices in the workplace will keep them happy and productive. Providing policies and guidelines for how these devices are used and what's loaded on them will give IT a level of comfort in managing risk and compliance.

The best way for IT to lead is to find a middle ground to bring the rebel alliance and the "dark side" together, so that all can work toward a shared goal.

For more on this topic, download the *Computerworld* QuickPulse report "Leading the Revolution of Device Independence." www.computerworld.com/whitepapers/verizonbyod

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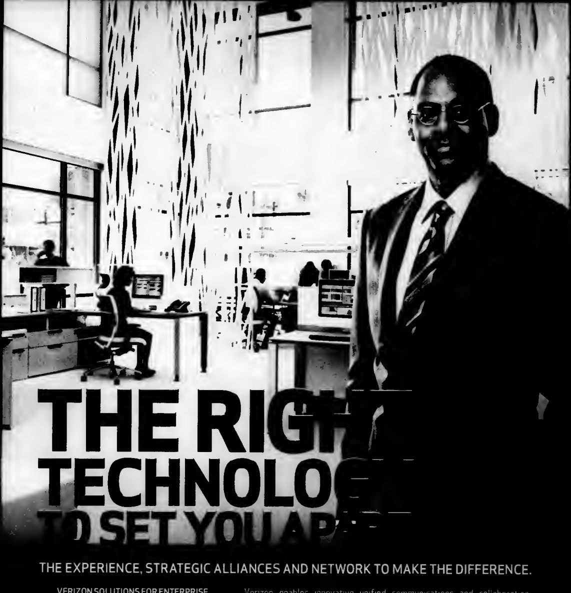

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database that pulls data from all of the building's management and control systems, and from the use of analytics to study that data to ensure that all systems work in concert to minimize energy consumption and optimize operations.

Such IT-driven designs can also be applied to existing buildings, generating energy savings of 5% to 10% simply by optimizing how existing systems run, experts say. "There's a huge opportunity for building owners to do the sorts of data mining that other industries have done for years," says Jim Sinopoli, managing principal at Smart Buildings LLC, a design, engineering and consulting firm. "Using analytics, you can predict when there's going to be a failure and when to do preventative maintenance."

Over the past several years, building management and control systems have been gradually converging with traditional IT infrastructures. Open standards now dominate at the hardware layer, where industry-standard communication protocols allow data collected by data points such as sensors and valves to flow over the corporate IP backbone to server-based building management systems that control everything from heating, ventilation and air conditioning (HVAC) to lighting, power, fire protection, security, elevators and building access.

"Sensors are becoming better, smaller and, most important, cheaper," says James Dagley, vice president of marketing at Johnson Controls, which sells an automation system used in the SFPUC building. For example, the vendor is testing a technology that uses Ethernet to power LED lights, each of which includes 12 different environmental sensors that measure things such as light, humidity, temperature and motion. "Each sensor costs about two cents," says Dagley. All of that data can be tied back to a Johnson Controls building automation system in the San Francisco office tower.

"From a hardware standpoint, the industry has fulfilled its goal of integrating," says Tom Hartman, principal at The Hartman Co., an engineering firm specializing in smart buildings. "But from a software standpoint, there hasn't been much progress."

"When it came to pulling all of that data into one platform to streamline management of the building, that wasn't available," Vafaei says. So the commission developed an integrated building management system (IBMS), a custom-built SQL Server database that pulls data from every monitoring and control system, including those that regulate heating and lighting, elevators, generators, solar arrays, the internal window blinds and external shutters that adjust natural lighting, and the roof-mounted weather station. "The IBMS provides a management layer on top of the traditional controls," Vafaei says. The system also aggregates data and provides information dashboards that give an end-to-end view of all systems to building managers, executives, employees and even the public, by way of a 40-foot-wide media wall in the main lobby.

Smart Buildings' Sinopoli worked on the IBMS. "We're at the point now where you can integrate these building systems. An IT infrastructure has really penetrated all building systems," he says. And once the data has been integrated, all of those systems can be functionally connected so that an event in one can trigger a response in another.

At the SFPUC building, for example, the IBMS applies real-time analytics to data from the shade, lighting, HVAC, weather station and room occupancy sensors to determine how shade positioning will affect both cooling and lighting system loads. The shade position is then adjusted automatically.

Not Just for New Construction

Existing buildings can also benefit from an IBMS, says Darrell Smith, operational supervisor at Microsoft's Real Estate and Facilities organization. The company's Energy Smart Buildings project, now under way in the 118 buildings that make up its Redmond, Wash., campus, uses an IBMS and analytics tools to optimize operational and energy efficiency across seven building management systems. The IBMS pulls data from those systems, which track HVAC, lighting, power monitoring meters, generators, power distribution units and circuit monitors. Because of the complexity, says Smith, partnering with IT was critical. "They looked at the protocols with us and how we were going to get the data out of these systems," he says.

Microsoft's campus has 2 million mechanical and electrical data points (the SFPUC building has 13,500) that generate 500 million data transactions, or data point updates, per day. "The business was doing nothing with that data," Smith says. Replacing those building systems, from power metering to lighting and HVAC, would have increased efficiency at a cost of $50 million to $60 million. Instead, the facilities group decided to extract the data from its existing systems and transfer it into a common SQL Server database, where the data could be analyzed and each building's operational performance could be assessed using key performance indicators, such as power demand per person and average demand per square foot, as well as a building performance indicator rating for each type of building (a lab or an office, for example). Microsoft generated operational dashboards for facilities staff, and it will soon offer plug-level usage data for its Sustainability Champion program, which will let employees see how their individual energy conservation efforts pay off.

Both energy-efficiency optimization and fault detection and diagnostics are based on rule sets that are typically customized for each project. The rules determine

San Francisco Public Utilities Commission Headquarters

Square footage: **277,500**

Height. **13 stories**

Construction cost per square foot: **$257**

Annual energy use: **2.8 million kwh**

Renewable energy sources **Solar panels, wind turbines**

Maximum energy produced by renewable sources: **227,000 kwh per year**

Percent of total energy consumption supplied by renewable power: **7%**

Projected overall energy savings versus conventional building: **32%**

Expected life of building: **100 years**

Projected energy savings over the building's lifetime: **$3.7 billion ($500 million in 2012 dollars)**

ROI **26 years**

whether equipment is operating efficiently; if there's a problem, the system performs tests to find the cause.

The SFPUC's rules, which were developed using a spreadsheet-based energy analysis tool called eQuest, also calculate the increased cost associated with running a system out of specification. When a critical event occurs, the IBMS can automatically generate a work order in the facilities management system, says Sinopoli.

Microsoft's engineers created 195 rules and used SQL Server's Stream Insight event engine, along with analytics software from Iconics, to perform calculations that identify faults and monitor efficiency. "We not only find the faults, but monetize them," says Smith. For example, variable air volume (VAV) boxes control airflow in the air conditioning system. If one of the 20,000 VAV units isn't properly calibrated, the system alerts the facilities group before any employees call to say they're uncomfortable. The rules also calculate the energy cost savings that would result from fixing the problem, allowing the facilities group to prioritize the work. "We went from walking around to figure out what's not working to figuring what's not working and costing the most. That saved us over $1 million right there," Smith says.

The system also has allowed Microsoft to start moving toward a just-in-time maintenance and tuning schedule, a trend known as continuous commissioning. Following a traditional maintenance schedule, more than 26,000 filters would be changed quarterly, and each of the more than 800 building air-handling systems would be tuned in a five-year rotation. With the new system, Smith says, "we were able to go much deeper with the data and tune all [30,000] of the assets, not just the large building systems." The problem with tuning 20% of the systems each year is that, as with cars, the efficiency and performance of building systems degrade gradually over time. Now Microsoft uses analytics to replace each filter based on actual usage.

Leveraging IT to optimize smart buildings is here.

DARRELL SMITH.

"Instead of changing them on a schedule, we change them at the right time. That's the intelligence we're talking about — a building generating its own work orders," Smith says. And by prioritizing maintenance needs, the facilities organization can continually tune the campus. "It compresses the five-year cycle into one year for a total savings of $1 million," he adds.

The Redmond campus project, which is about 20% complete, has also allowed Microsoft to reduce its peak energy demand. "We were causing our own peak demand just by how things were occurring in the building," Smith says. Resequencing when different building systems came online smoothed out the demand curve. In the pilot phase, Microsoft has so far shaved energy costs by 6% to 10%, while the application of analytics for fault detection and diagnostics is projected to save more than $1 million annually. "Our payback on this will be about 18 months," he says. That payback period is shorter than it would be in other states, however, because Washington has the country's third lowest electric power rates.

On the Leading Edge

Bringing this level of integration to smart buildings is still considered leading edge. "Analytics for fault detection are pretty new on the market, and Microsoft is the first to apply diagnostic and fault detection technology on a mass scale," says Russell Agrusa, president and CEO at Iconics, which develops and markets software for factory and building automation management. A building needs to be at least 100,000 square feet to make the investment pay off, and it should have metering at least on every floor to take full advantage of the technology, he says.

Several vendors, including IBM, Microsoft and Tridium, offer tools to help with integrated, data-driven designs that provide end-to-end views of building control systems. But achieving this level of integration in new construction isn't always easy, says Rawlson King, spokesman at the Continental Automated Buildings Association in Ottawa, Ontario. "You can still contract with integrators and not have the systems working to your specifications, despite the fact that they are experts," he says.

One reason is that traditional construction processes aren't optimized for this level of integration, and the participants — the architects, engineers, general contractors and subcontractors — tend to operate in silos. The architect, design engineer and general contractor aren't in communication with the people doing the actual work — or with one another. Instead, each reports to the building owner, and each has different priorities, Hartman says.

"Almost every chilled water plant in the U.S. today has been designed, programmed, commissioned and operated by entirely different sets of individuals who rarely talk to each other," he says. As a result, most operate at double the energy consumption that's necessary. "Because of that, it's been impossible to raise the level of sophistication of controls. It's not better technology or products. It's the process," Hartman adds.

The SFPUC broke with that tradition and took more of a team approach. "We were fortunate to have a design team and a construction team that worked collaboratively. That was paramount in making this a success." Vafaei says. But, he acknowledges, "it took time for everyone to get to that stage."

Vafaei also recommends having vendors sign a compliance statement indicating that they support open communication and database protocols. This ensured that the commission could pull the data it needed from every system.

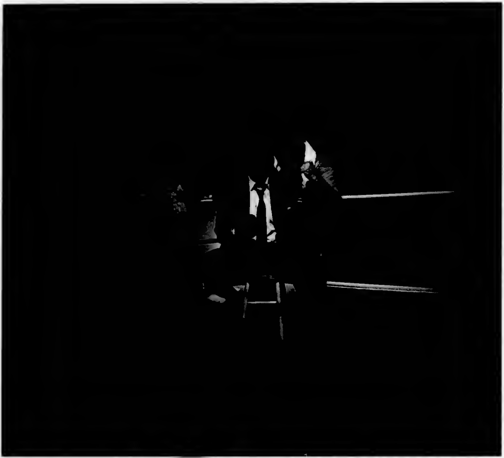
"When it comes to controls and automation, everything should be open. As we replace things, that's where we're going," Smith says.

Both Microsoft and the SFPUC also enforced the use of a naming convention for data points on all control systems so as to avoid a name conversion step when importing data into the IBMS. Microsoft had the foresight to require vendors to use its 32-decimal naming convention years ago; the public utilities commission required every vendor to use a convention it published.

Things aren't perfect, though. Microsoft still needs to automate reporting. For example, the process of reading more than 1,000 meters, normalizing that data and getting it into the database is still manual, and the tools for managing a smart building holistically are still evolving. But the industry may finally be at a turning point.

Ten years ago, building automation consisted of using dial-up connections into PCs, one for every system, Smith says. "But in the last couple of years, we've jumped the chasm," he says. "Leveraging IT to optimize smart buildings is here."

However, he adds, that level of "personal control" is still at least three to five years away from mainstream adoption. ◆



COMSTOCK

Do You Need *an* Executive Coach?

CEOs have long used executive coaches to take their leadership to the next level. Now IT pros are following suit.

BY MARY K. PRATT

[redacted]

T DIRECTOR KARRIEM SHAKOOR noticed a trend among high-performing athletes: They all had personal performance coaches. It made him wonder: Should he get a coach to up his professional game?

His own boss supported the idea, and his research showed that many CEOs hire executive coaches. So Shakoor, who has worked in IT since 1991, hired a coach to help him take his leadership skills to the next level.

"I felt that in order for me to really assess my strengths and weaknesses, I had to engage with a coach who could step back to observe me, provide feedback and then help me tweak my performance," says Shakoor, who, as senior director of IT shared services at Blue Cross Blue Shield of Michigan, has eight direct reports and manages just over 300 full-time employees.

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Shakoor started working with coach John Baldoni in 2009. They had scheduled face-to-face meetings and talked on the phone to discuss additional topics as they arose. A coach, says Shakoor, is different from a mentor or a boss. "What he really is, is a person who has an understanding of my strengths and weaknesses and how they translate into my style as a leader," he explains.

The initial goal was for Shakoor to improve his executive presence and executive style, and a six-month assessment, based on feedback from company executives, showed he had indeed improved in those areas. Nonetheless, Shakoor continues to meet with Baldoni for an hour every month or two as he works toward his ultimate goal of one day becoming a CIO.

Shakoor can't point to any one work situation where coaching helped him score rather than strike out; rather, it's his overall ability to assess and successfully navigate various management challenges that has improved. "As an executive in a very fast-paced, demanding field, I view myself as an athlete, and having a coach who keeps me well tuned as a corporate athlete has been a great benefit," he says.

Could a coach do the same for you?

Typically, IT professionals haven't taken advantage of such services at the same pace as senior managers in other fields, say coaches, CIOs and other corporate leaders. But that's changing as tech executives — and their companies — begin recognizing that IT can gain as much from coaching as others in the C suite. In fact, coaching may be even more beneficial to IT leaders, particularly those who rise through the ranks on the strength of their technical expertise rather than their management experience.

The good news: As IT demand for coaching services has risen, there's been an increase in the number of coaches with experience in either IT management or coaching IT leaders, says Suzanne Fairlie, founder and president of national executive staffing firm ProSearch in Ambler, Pa., who frequently recommends coaching to CIOs.

Who Gets Coached, and When

Like their counterparts in other business units, IT professionals sign on with executive coaches under a variety of circumstances. Some get coaches as part of executive compensation packages that come standard to all leaders at certain levels of the company. Others are assigned coaches individually — either because they're rising stars who are being groomed for promotion or, on the flip side, because they're struggling managers who need help in specific areas of performance. And some people decide on their own to work with a coach as a way of investing in their careers.

Prices vary, but multiple sources say the cost of coaching services ranges from $200 to $500 per hour. Though employers usually cover the cost of the service, some professionals do pay coaches out of their own pockets for various reasons. Some might work for companies that are having financial difficulties and just can't afford such expenses. Others might want their coaching arrangement to remain private, or they may not have reached a level where the company is willing to pay for them to get coaching.

At what point in an IT leader's career does it make sense to engage a coach? Baldoni, president of Baldoni Consulting in Ann Arbor, Mich., and author of several leadership books, says there is no set rule. However, in general, "most companies hire executive coaches for more senior leaders — director, VP and above," he says. "That said, anyone can benefit from coaching, and some companies do provide it to emerging leaders."

5 Simple Truths About Coaching

1 **It's a perk, not a punishment.** "At one time, coaching was seen as remedial," says executive coach John Baldoni. "But more and more it's a badge of honor, because as more CEOs talk about being coached, it's seen as a perk. It's also couched as a developmental tool, so even when there's an issue, it doesn't mean [someone] is a poor performer. It's just others see that they can be a better performer if they address the issue."

2 **It all hinges on the client-coach relationship.** Executive coaches say you have to have some chemistry to make the relationship work. You have to trust your coach and have confidence in his or her experiences and expertise in order to feel comfortable speaking openly about issues. "It's like a doctor or an architect — try the relationship on for size. You have to click with that person," adds Suzanne Fairlie, founder and president of executive staffing firm ProSearch.

3 **It's not a magic cure-all.** Clients should identify areas where they want to improve, but they should also understand the limits of coaching, says Larry Bonfante, CIO of the U.S. Tennis Association, an executive coach with his practice CIO Bench Coach, and author of *Lessons in IT Transformation: Technology Expert to Business Leader*. "I've had people who want me to wave my magic wand or sprinkle fairy dust over them, but it doesn't work that way," Bonfante says. He says it's more about bringing a C performance up to a B, or a B up to an A.

4 **It's a business arrangement.** Alan Guibord, founder and chairman of The Advisory Council in Salem, N.H., says coaches generally use contracts to specify pricing, objectives and the frequency of meetings. They also generally offer details of how they approach coaching, explaining how they assess their clients and measure success. Guibord and others say it's important for coaches and clients to agree on such terms up front.

5 **It requires a personal willingness to change.** "The only way that coaching can be successful is [if] the person being coached [is] open-minded, humble and willing to accept advice," says Guibord. "That's a hard part for everybody."

— MARY K. PRATT

Effective, Focused Leadership

IT executive Caren Shiozaki has worked with two coaches over the course of her career.

She first had a coach when she was CIO at a Dallas-based Fortune 1000 media company that paid for coaches for all of its executives. For 18 months, she and her coach talked once a month for an hour or two, usually by phone but sometimes in person. Shiozaki also called her coach to work through particular scenarios as they cropped up.

The meetings were unstructured, she says, allowing her to talk about whatever challenges she faced at the time. Typical topics included how best to build relationships throughout the organization and how to rally support from other business leaders for changes she wanted to implement.

"There were some initiatives directed from the top that I was responsible for implementing. These had major implications for a number of stakeholders, who understandably reacted very emotionally," Shiozaki recalls. "Being able to better take into account their perspectives helped me develop better approaches to change management. The coach helped me improve my emotional IQ."

Shiozaki worked with a coach a second time after she became CIO at Thornburg Mortgage in Santa Fe, N.M., in 2007 (the company is now known as TMST). She hired — and paid for — the coach to help her keep herself and her team focused as the company dealt with the fallout from the 2008 economic collapse.

"It's challenging coming in as CIO into any situation, but when you add onto it the looming possibility of bankruptcy and the financial turmoil, it compounds the challenges," she says. Shiozaki says she looked for a coach who could help her stay grounded and be "the strong leader the company needed."

Shiozaki connected with her second coach once or twice a month in person or by phone for 18 months. That coach had a more structured approach than her first one, giving her particular tasks to accomplish by specific deadlines and holding her accountable for meeting those goals. For example, she and her coach devised a plan to help a direct report who was having a difficult relationship with a colleague.

> **Coaching is a guided form of self-discovery. You get out of it what you put into it. It's about helping yourself become more effective as an executive and as a leader.**
>
> **JOHN BALDONI**, PRESIDENT, BALDONI CONSULTING

Different Coaches, Different Styles

Shiozaki's experience with different coaching styles is the rule rather than the exception. Coaches, clients and others familiar with the process say coaching arrangements vary based on the executive's needs, company policy, the coach's own style and other factors.

Baldoni says he works with a model that goes from assessment to action plan to evaluation. As part of the assessment, he asks clients about their current performance and what they want to change. He uses assessment tools and tests to evaluate leadership styles and personality traits. As privacy and access permit, he also conducts interviews with "stakeholders," who might include peers, supervisors and direct reports.

Baldoni says he and his clients then choose one or two areas to work on — most often communication skills, the ability to influence, leadership presence and delegation skills.

The process involves a lot of talking and listening, but he also assigns homework — which could be as straightforward as reading an article or as amorphous as working on behavioral changes. He might, for example, have a client who's trying to improve his communication skills work on letting others have a chance to voice their opinions.

Like most other executive coaches, Baldoni limits his engagements to a specific period of time, often six or 12 months, at which point he confers with clients to evaluate how their performance has improved. "Coaching is a guided form of self-discovery. You get out of it what you put into it," he says. "It's about helping yourself become more effective as an executive and as a leader."

Soft Skills, Hard Results

Mary Jo Greil, president of The Carson Greil Group, a coaching firm in Memphis, acknowledges that some of the goals established in executive coaching might seem esoteric, but she says improvements are quite tangible.

Greil, whose coaching arrangements typically involve phone or face-to-face connections for one hour every two weeks, says she begins with a statement of work and then has her clients evaluate how they're doing against their articulated outcomes.

When Vickie Smith first started working with Greil eight years ago, her goal was to bring her IT organization to the forefront of her company, Helena Chemical in Collierville, Tenn. She hoped that IT would be recognized as an essential department that was very much a champion for the business.

"Before, [IT] was seen as just a support department; it was seen as being in the back, and I wanted to make sure I was giving the company the best that I had," says Smith, who was director of IT at the time but wanted the company to elevate the position to CIO.

Smith and Greil developed a plan to accomplish that goal, with Smith focusing on gaining trust for her technological vision both within the department and throughout the company. They created agendas for their meetings, and Greil had assignments for Smith to tackle — such as reading a particular book.

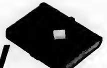
Smith says she believes the coaching has had a clear return on investment for her and her department.

The results are tangible, she says, adding that "all the relationships you have within the organization — whether it's with your peers, your superiors, your subordinates — you can tell when you've gotten results and you're providing better service and they recognize IT as a top organization."

Another clear result: Smith became the company's first CIO in December 2009.

"I can't say coaching actually did it. Certainly hard work and results [earned it] for me," she says. "But I do know that coaching helped me and gave me some additional skills and information where I felt more comfortable going and proving the role that I wanted." ◆

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. You can contact her at marykpratt@verizon.net.*



Security Manager's Journal

MATHIAS THURMAN

Trouble Ticket

Security Extends to Customers

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NO BUSINESS wants a customer complaining about security weaknesses in its products. If that had been the extent of what happened to my company last week, it would have been bad enough. But it was worse, because in this case, a customer skipped the normal means of reporting a problem and brought a concern about one of our software products directly to one of our senior vice presidents. Instant escalation.

Since I'm the security guy, this became my problem. Never mind that I'm not well versed in application development. Forget the fact that for the past year I've been saying we should pay more attention to the security of the software we sell with our hardware. We have a problem, it involves security, so I need to fix it.

Not that I see this as unfair. I *am* the guy in this company whose job it is to think about security. While I, like most security managers, focus on things like the corporate network, the protection of intellectual property and public-facing Web applications, I can't ignore that our business includes providing products that also need to be secure. Naturally, most of my attention in that area has been focused on assessing and providing security recommendations for our flagship product. But we have a lot of other software products that don't sell as well or make as much money.

It was one of those less popular software packages that caused our recent problems. A large customer had purchased it, installing both a Web front-end application and a back-end SQL database. Not unusually, the customer had to comply with some industry guidelines, and an assessment of our application turned up some glaring security issues. For example, the application wasn't sufficiently encrypting passwords. That's embarrassing, since proper protection of passwords should be a no-brainer for our development team.

computerworld.com/
blogs/security

The best practice is to encrypt passwords with a one-way hash and then utilize a random "salt" to ensure that brute-force attempts to crack the password would be extremely time-consuming. Our application only hashed the passwords, meaning they could be easily decrypted.

The customer also found several other problems. Most significantly, our software was vulnerable to SQL injection attacks, in which the back-end database would serve up sensitive data. In all, the problems gave the impression that we don't take security seriously.

Educate to Mitigate

Ever since this was brought so forcefully to our attention, we have held several conference calls and workshops to address the issue. I'm not a programmer, but I am trying to educate the development team.

So far, I have articulated the difference between security features and secure architecture and development. Security features include things like role-based access, support for two-factor authentication, selective data encryption, logging and alerting, session time-outs, integration with Directory Services or SAML, access restriction by IP address, and options for password complexity and management. Secure architecture and development includes properly segmenting the front end from the back end, ensuring secure data transfer, and properly inputting validation to mitigate SQL injection or certain types of cross-site scripting. It also includes protections against buffer overflows and race conditions.

I have also organized on-site training from a third party that specializes in application security development, since I recognize that I'm not an expert in this field.

The best thing I can do is to provide the guidance, training and tools to allow the developers to be successful. But I will also be more aggressive in third-party assessments of all of our applications, not just the flagship products. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

> **We have a problem, it involves security, so I need to fix it. Not that I see this as unfair.**

OPINION

PRESTON GRALLA

Tech Talk Seems Taboo On the Campaign Trail

AS THE PRESIDENTIAL ELECTION NEARS, the debates and discussions have ignored some of the most important issues of our time, issues that will go a long way toward determining what kind of country we will be and what kind of economic future we will have.

I'm talking about technology issues. On the political hustings, technology is rarely mentioned. When it is, it's uttered with the same kind of knee-jerk generic approval as motherhood. But just as motherhood these days has a host of political implications associated with it, so does technology — though in the case of technology, the issues aren't discussed.

What's at stake? Privacy, antitrust regulations, cyberwar, the digital divide and digital literacy gap, a potential Internet sales tax — and that's just for a start.

For example, broadband access in the U.S. significantly lags other developed countries, such as South Korea. Should the government spend money to close that gap, offer incentives to close it or leave it up to the private sector? Should the government establish stricter rules to protect people's online and mobile privacy, or will doing so hurt Internet and mobile companies and end up costing jobs?

And how about the cap on H-1B visas for tech workers? Should it be raised, lowered or kept the same? Should the government follow Microsoft's proposal to allow companies to pay $10,000 for every new supplemental H-1B visa and $15,000 for a STEM green card visa, and then take the up to $500 million those fees would raise each year and invest it in education, mainly STEM programs?

You likely haven't heard either candidate address issues like these, and you probably won't. That's because discussions about them are complex and not amenable to sound bites.

Discussions about technology issues are complex and not amenable to sound bites.

State and local elections are much the same. Where I live, in Massachusetts, we've got one of the most hotly contested Senate races in the country, pitting Republican incumbent Scott Brown against Democratic challenger Elizabeth Warren. Anyone tuning in to watch the debates has heard plenty of talk about Elizabeth Warren's possible American Indian heritage, not exactly a burning issue that will affect anyone's life. But even in a state like Massachusetts, whose economy is heavily tied to tech, you won't find any serious discussions on the topic.

Notice that I use the word "serious," because every once in a while, technology does get mentioned. But when it does, it's generally a discussion that belongs on the nut-case fringe. In Maine, a state whose political culture is normally staid and sober, the Republican Party sent a mailing in early October warning that Colleen Lachowicz, a Democratic candidate for the state Senate, "has been living a time-consuming double life as a member of the World of Warcraft Community." Maine GOP communications director David Sorensen warned that Lachowicz "lives vicariously" through her WoW character, Santiaga. The Maine GOP believes this to be such an important issue that it has built a website, ColleensWorld.com, "where people can see Lachowicz's online activity for themselves," in the words of a GOP press release.

The site exists, but if you try to go there from the online version of the GOP press release announcing it, you'll get a "Server not found" connection error — essentially the same kind of error you'll get if you go looking for a serious discussion about tech issues this campaign season. ◆

Preston Gralla is a *Computerworld.com* contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

Career Watch

Q&A

Cara Hale Alter

The founder of communication training company SpeechSkills explains how to **project confidence and competence,** *the topic of her book* The Credibility Code.

What is a "look of competence"? Most people believe that competence, like beauty, is in the eyes of the beholder. Truth is, however, that there are at least 25 specific behavioral cues that affect the perception of competence. For instance, you're more likely to appear competent if your head is level – avoiding raising or dropping your chin – and your spine is straight. You're also more likely to come across as competent if your voice is strong and resonant, your articulation is crisp and clear, and your pace is relaxed. Additionally, you're more likely to seem competent if you hold eye contact with others for at least three to five seconds. So, if you want to achieve a look of competence, learn the skills that can strengthen your posture, voice and eye contact. There are numerous other behavioral cues, but these skills are a smart place to start.

What are some common ways that people muddy their presentations? They use too many speech fillers (uttering superfluous sounds and words, such as "um" and "you know"), make extraneous movements (fidgeting excessively, whether bobbing their head, shifting their weight, fiddling with their jewelry, etc.), engage in too much self-commenting (overreacting – out loud – to their every mistake), and speak in "up talk" (using upward inflections that sound like question marks at the end of sentences). Almost everyone I coach, and this includes senior-level executives, needs to work on at least one of these behaviors.

Still, the single most pervasive problem is people's acceptance of being merely adequate. For instance, while speaking, they might assume that just because they're technically audible that they're communicating successfully. Now more than ever, though, it's critical to distinguish between what's adequate and what's *optimal*. To really stand out today, you've got to ratchet up each of your skills – improve your posture, voice and eye contact, increase your energy and expression, and more.

Can a person look competent without being competent? Absolutely. Over time, however, the truth will definitely "out" someone. This is also the case when the situation is reversed: A competent person who appears incompetent will ultimately be recognized for his talent and abilities. The bad news is that in today's high-speed, hypercompetitive workplace, many smart, capable people don't get second chances. They are genuinely competent, yet in not knowing how to *look* competent, they miss out on key opportunities.

Now, in reading this, some people might worry about being snowed by a smooth direct report or co-worker pretending to be competent. But here's a comforting fact: To have a look of competence requires immense self-awareness and, by and large, self-awareness requires considerable smarts.

– JAMIE ECKLE

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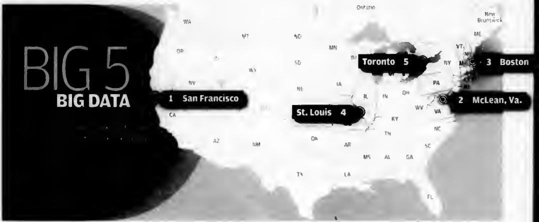

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Consultant(s) (Infrastructure Management) – US needed to analyze customer infrastructure environments, contribute to solution creation, design, deployment, support and maintenance, as per customer requirements. (Ref # Inf_EXTERNAL_58483386_1).

Principal Consultant(s) (Infrastructure Management) - US needed to assess customer IT infrastructure environments across multiple tracks. Anchor the preparation of work proposals, contracts, and finalize the scope of the work to be performed for the customer. Travel Required. (Ref # Inf_EXTERNAL_58498779_2).

Principal Technology Architect(s) – US needed to create solution/service roadmap and define solution offerings, identify new business opportunities and foster relationships with client CXOs/senior executives to position and evangelize service offerings. Travel required. (Ref # Inf_EXTERNAL_58498773_1).

Technology Architect(s) (Cloud) - US needed to provide input for best fit architectural solutions. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability maintainability (Ref # Inf_EXTERNAL_58513133_2).

Technology Architect(s) (Engineering) - US needed to provide inputs on solution architecture based on evaluation/understanding of solution alternatives, frameworks and products. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability, maintainability. (Ref # Inf_EXTERNAL_58513137_2)

Technology Architect(s) (Enterprise Security) - US needed to provide inputs for best fit architectural solutions. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability, maintainability. (Ref # Inf_EXTERNAL_59210147_3)

Technology Architect(s) (Enterprise Solutions) - US needed to provide input on solution architecture based on evaluation/understanding of solution alternatives, frameworks and products. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability, maintainability. (Ref # Inf_EXTERNAL_58513145_4)

Technology Architect(s) (SOA & EAI) - US needed to provide input for best fit architectural solutions. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability, maintainability (Ref # Inf_EXTERNAL_59210461_3).

Technology Architect(s) (Business Intelligence) - US needed to provide input on solution architecture based on evaluation/understanding of solution alternatives, frameworks and products. Will interact with clients to elicit architectural and non-functional requirements like performance, scalability, reliability, availability, maintainability (Ref # Inf_EXTERNAL_58513027_2)

Senior Associate(s) – Management Consulting needed to lead and contribute to different phases of business engagement including launch, delivery and closure, lead small and medium-sized projects or complex/key sections of engagements, track and ensure adherence to timelines, milestones and other operational/financial processes. Travel Required. (Ref # Inf_EXTERNAL_58506178_2)

Partner(s) – Management Consulting needed to create / identify multi-million dollar opportunities within existing and new clients using deep industry knowledge, intellectual capital background in potential problem areas, knowledge of upcoming regulatory and market changes and Infosys service offerings. Travel Required. (Ref # Inf_EXTERNAL_59113123_2)

Principal(s) – Management Consulting needed to lead small proposals and multiple streams on complex proposals. Develop best in class proposals that present Infosys Point of View, approach and solution. Travel Required. (Ref # Inf_EXTERNAL_59113135_2)

Associate Manager(s) (Client Services) needed to contribute to competitor analysis and prospect identification, provide ground intelligence to pursuit teams, as well as account context and client introductions required for opening diverse service offerings in account(s). Travel Required. (Ref # Inf_EXTERNAL_58483074_2)

Associate Practice Engagement Manager(s) needed to analyze competitors and identify prospective customers. Perform analysis and intelligence gathering required for early and strategic client engagement. Travel Required. (Ref # Inf_EXTERNAL_59108984_1)

Manager(s) (Client Services) needed to navigate business account to identify different kinds of deals, form and lead pursuit teams, help pursuit teams with customer context, competitor and industry context, details on pain-points and client introductions required for opening diverse service offerings in own account(s). Travel Required. (Ref # Inf_EXTERNAL_58498686_1)

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ERP Consultants - Job #080 (send to sogeti-0912-job080@sogeti.net)
PLM Consultants - Job #090 (send to sogeti-0912-job090@sogeti.net)
Business Analysts - Job #110 (send to sogeti-0912-job110@sogeti.net)
Project Management Services - Job #120 (send to sogeti-0912-job120@sogeti.net)

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn Lisa Harrington. Please reference job # below
Test Engineer (NY, NY), **#1615.924**. Design, develop, modify, and/or test software needed for various internet search engine company projects. Exp incl test automation in C++, Java or Python, test tech, scenario plan, & troubleshoot
Enterprise Program Mgr. (NY,NY), **#1615.1126**. Promote and support Google enterprise products. Exp incl: Java prog, script in Python or Bash, CA SiteMinder, Tivoli Access Mgr, or Sun Access Mgr security syst, encrypt & security protocols, such as SSL, security shell (SSH), & certificate mgmnt; web appl dvlpmnt, high availability design, & web security implement; Lotus Notes appl dvlpmnt, SharePoint, Documentum, Livelink, or IBM content mgmnt syst; proj mgmnt, leadership of global tech solutions implement; & mgmnt strategic bus partners
SW Eng Positions (NY, NY). Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp incl
#1615.3925, distrib syst design, perf analysis, data model & analysis, & large scale sw eng'g
#1615.1016. multi-thread C++ dvlpmnt, analysis & optimize distrib syst perf; ntwrk security, incl cryptograph algorithms, & DNS &/or IP version 6 ntwrkng

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn. Lisa Harrington. Please reference job # below:
Technical Program Mgr. (Kirkland, WA): **#1615.4250**. Lead complex, multi-disciplinary engineering projects using eng'g. Exp incl, sw dvlpmnt, Java, Python, or C#; distrib web-based syst; database design, dvlpmnt mobile device pltfrms, & proj mgmnt for large & complex sw syst.
Software Engineer Positions (Kirkland and Seattle, WA): Design, develop, modify, and/or test sw needed for various internet search engine co. projects. Exp Incl.:

#1615.1628 - oo design & development, & proj mgmnt throughout the sw life cycle, C++, Java or C#; User Exp design; design of large-scale distrib syst, & design of fault-tolerant syst
#1615.782. Java or C++, design & implement complex, multithread algorithms & large-scale data struct, design, implement, & oper of large-scale complex sw syst,& utilization of scientific analysis & math to monitor the perf & scale of syst.

Sogeti seeks Acct. Mngr for Dayton, OH office. Responsible for business development & delivery objectives, P&L for top & bottom line, customer satisfaction & overall client relationship for key accounts. Requires Bachelor's in Comp. Sci., Math, Eng., or Business & 5 yrs. exp. Will also accept Master's in Comp. Sci, Math, Eng or Business & 3 yrs of exp. Advanced exp in tech consulting & working @ various levels in lg consulting org.; Intermediate exp. in understanding Market Trends in Business Domain & Technology; Intermediate exp in tech sales. Demo exp w/ delivery, sales, or pre-sales roles, IT industry working practices/methodologies, & client VMS systems (Ariba, Prosource and eWorks) is req'd. Send resume and coverletter to: Sogeti-0912-job150@sogeti.net

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:
Product Mgr. (Mountain View, CA): **#1615.1225**; Take responsibility for Google product from conception to launch. Exp incl: recommend engines & cluster algorithms, complex sw back-end syst; dvlpmnt of prod in intl mkts; prod delivery through launch; proj mgmnt; & lead eng & cross funct teams.
SW Eng Positions (Mountain View, CA): Design, develop, modify, and/or test sw needed for various internet search engine co. projects. Exp include:
#1615.605: Java dvlpmnt; oo tech; GWT, Jscript, or jQuery dvlpmnt; HTML, CSS, & client-side infrastruct; hands on infrastruct dvlpmnt & sw arch large scale high traffic, high data online multi-tier apps, tech train & dvlpr support, & qa & automate web& funct test.
#1615.4206. C; C++; Java, Python or shell script, qa & test, data analysis, oo tech, algorithm dvlpmnt & implement, source code mgmnt syst, & dvlpmnt of infrastruct syst.
#1615.725, data analysis & related methods, algorithm design & implement, Python & C++ & large data set or parallel syst.
#1615.4127, C & C++, Unix, TCP/IP, oo tech, algorithms, & multi-thread
#1615.2650; Java dvlpmnt; algorithms, android dvlpmnt; & client sw design
#1615.2928, sw or research eng'g in R&D environ. AI, mach learn, large-scale oo syst design, program skills, incl C &/or C++, Java, Python & Unix script.
#1615.1344, algorithms or mach learn, Unix & Linux; C & C++, Bash & Python, & Stats_
#1615.892 HTML, CSS, Jscript & C++, multithread, & distrib syst
#1615.2159, C++, Python, Java, UI design, front end design & noise process, data mine, pattern recog, relational data analysis, & statistic model, time series classification & info retrieval, mobile syst arch & infrastruct; distrib data storage syst, & web dvlpmnt.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn. Lisa Harrington. Please reference job # below:
Software Engineer Positions (San Francisco, CA): Design, develop, modify, and/or test sw needed for various internet search engine co. projects. Exp Incl.:

#1615.3825; C &/or C++, Java, oo Jscript, AJAX, HTML & CSS, UI design & implement, front & back-end web appl dvlpmnt, develop admin panels, mobile pltfrm dvlpmnt, Eclipse, Git, & code reviews

#1615.257; partner syst integrate. PCI compliant integrate w/ large-scale payment syst, Java, C++, Python, &/or oo best practices, & Javacard & PCI compliance syst

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:

Strategist, Product Quality Operations (Mountain View, CA); **#1615.3453**: Drive process and procedure improvements for Google product quality. Exp. incl: coding or script lang for example: Python, HTML, or SQL; internet-based fraud investigate or internet-based risk mgmnt; web research, online advertise, or e-commerce; analyses of large sets of data; process & proj mgmnt of multi-region, cross-funct teams; & commun & collaborate w/proj stakehldrs.

Network Eng; (Mountain View, CA); **#1615.1218**: Identify issues for Google's ntwrks & determine appropriate solutions. Exp incl: support or implement of large wide area ntwrks; QOS/CoS, STP, VTP, VLAN, 802.1Q, Cisco IOS, & Cat OS, TCP/IP, GRE, IPSec, PPP, DMVPN's, VRRP, HSRP, & SNMP; ntwrk route protocol troubleshoot in BGP, EIGRP, MPLS, oper syst Unix, Linux, & Microsoft OS, enterprise & carrier-class routers & switches, LAN/WAN Arch, Access Control lists, RADIUS, & TACACS.

SW Eng Positions (Mountain View, CA). Design, develop, modify and/or test sw needed for various internet search engine co projects. Exp include

#1615.610, C, C++, Python, &/or Java, AI & analysis of large scale data social ntwrk analysis & spam analysis, large system sw design & dvlpmnt; & data struct, algorithms & sw design

#1615.4635, design large scale distrib syst, mgmnt of prod lifecycle f/ req to user adoption, incl req gather, translate to funct specs & create designs, implement sys in oo lang using web related protocols & specs, & web svs &/or appl servers, incl J2EE

#1615.362 C++ or Java; Jscript, HTML, & CSS; client server multi-browse dynamic front-end dvlpmnt, large-scale distrib syst, tech concepts to non-tech audiences, & tech leadership, incl interview & hire

#1615.618, C or C++, Matlab & R-scripts for data analysis, algorithms & data struct; parallel & distrib comput, & mach learn

#1615.1814, algorithms & distrib syst, large-scale scalable syst, highly available fault tolerant syst, database syst & SQL, proj mgmnt, oo program in C++, Python, Java, & Jscript, script lang, develop user-face sw; cross-browser pltfrms, app, ntwrk, storage, & hw prob troubleshoot; perf of a-b experiment & analysis of results, & AJAX, HTML, & CSS

#1615.1644, mobile app: Java, Python, mach learn, large-scale data process, stat data analysis & predictive model using R or similar stat tools, write design document to dev & inter-team commun. & design & dvlpmnt of automated content classification syst for mobile app.

Software Engineer in Test (Mountain View, CA) **#1615.881**; Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp include Java, Python, PHP, data struct & algorithms, Agile sw dvlpmnt, & design & dvlpmnt of backend & frontend syst.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:

Product Manager positions (Mountain View, CA): Take responsibility for Google product from conception to launch. Exp incl:

#1615.4226, proj mgmnt; data-set model; statistics; lead cross-func teams; & bus analytics;

#1615.1666, database design, stats; QA; sw eng'g & proj mgmnt; dvlpmnt internet prod & tech; mgmnt& leadership of team thru cycles of proj mgmnt, plan & implement. Up to 20% trvl req'd.

Developer Progams Engineer (Mountain View, CA): **#1615.1733**, Work to increase market acceptance of Google developer products. Exp incl: API; arch & design; dvlp code; dvlp prod strategy; dvlper articles & tutorials; & Java, Python, Ruby, REST architectural style design, .NET

PSO Partner Technology Manager (Mountain View, CA): **#1615.1073**, Take responsibility for Google product from conception to launch. Exp incl manage cross-func teams, proj mgmnnt & plan, prep prod requirements doc, build financial models, script lang, & database mgmnt.

SW Eng Positions (Mountain View, CA) Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp incl

#1615.3810 backend server appl, parallel data process syst, distrib syst, fault tolerance, ntwrkng, high perf computing, OS abstract, & multithread program in C++

#1615.2351, C, C++, & Python large scale distrib syst; & monitor prod infrastructure

#1615.1718, sw dvlpmnt in Unix and/or Linux, program C & C++, Java, & Python, design & implement of large-scale syst experiment with & eval large-scale distrib algorithms, & design large-scale data storage

#1615.1574, C++, Java, Python, Shell; data storage syst, such as SQL; algorithms; data struct; mach learn & video analysis, distrib syst, Internet, TCP/IP, HTTP, & HTML.

#1615.4915; program algorithm design & implement, parallel & distrib compute, & Linux oper syst

#1615.2201, eng'g or proj leadership, mgmnnt of entire lifecycle of prod f/requiremnts to user adoption, incl gathering, translation of funct specs & create designs; implement systems in oo lang emphasize web related protocols & specs, & web svcs & API design. Up to 25% trvl req'd

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4. Inf. Sys. Mgr: Plan & coord activities of s/w prof
5. Mgmt Anyst: Ana bus process thru app of s/w sol
6. Bus. Dvlpt Mgr: Determine IT servs/prod & implement bus plans
7. Sys. Eng: Ana, design, test & maintain s/w appl
6. Sys. Mgr: Ana user needs & dvlp s/w arch sol
9. Sales Mgr: E2E sale of IT servs/prod
10. Engineering Mgr: Coord & direct integration of IT proj activities
11. N/W Infra Eng: Identify & eva n/w req., design, dvlp, install n/w infra appl
12. N/W Infra Mgr: Plan & coord proj team in design, dvlp I test & implement n/w infra sys
13. Graphic Desgr: Design UI & perform usability testing.

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:

Software Engineer Position (San Bruno, CA) Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp incl:

#1615.2181: Java & C++, ntwrk program & analysis, data struct, algorithms, & sw design; large syst sw design & dvlpmnt; Unix & Linux, Python, Jscript &/or AJAX, log analysis & data interpretation, data mine & info retrieval, database design & SQL, TCP/IP, & ntwrk program. Up to 20% trvl req'd

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below

SW Eng Position (Pittsburgh, PA) **#1615.719**

Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp include C++, Java, Jscript; Python; data struct; databases, multithread, MapReduce, mach learn, & stats

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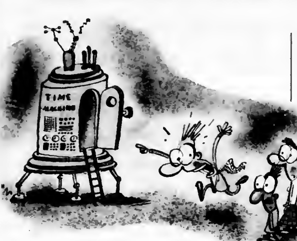

Timing Isn't Everything . . .

There's a very tight schedule for this project, and it's been decided that it requires a testbed server for a new database connector, says a pilot fish who's in on the project's conference call. "I tell the project team it will take until Friday just to rebuild a testbed server from scratch, ship the server to the engineer and get the necessary software installed," fish says. "If nothing goes wrong, that still leaves no time to get the testing done. The engineer assigned to this task does a little thinking and agrees that time is just too tight. So the test server is out of the picture and so am I. Since my work appears to be done, I just listen as everyone else develops a plan to send this engineer three time zones east to be in the remote office to work on Thursday and Friday of the following week. This engineer also has to work for another client all day Wednesday of that same week. After several more minutes, I cut in and point out that the engineer can't possibly get there overnight and be in any shape to work. He would have to spend Thursday flying and then configure the server on Friday. After a moment of silence, it's decided that the new server can be configured remotely."

Just Like You Told Me

Employee who works in a remote office takes his company iPhone to the mobile carrier's local store in order to get a replacement. Once he has it in hand, he calls this IT pilot fish at HQ with a problem. "He said his new phone didn't accept his password, which meant he couldn't set up company email on the phone," fish reports. "I sent him our standard, detailed instructions on how to set up our corporate email on an iPhone. A bit later, he emailed me from his laptop, saying he got this error: 'Unable to verify account info.' He added, 'When I fill in the email address as billy.goat@ourcompany.com like the instructions say, I keep getting this same error.' Once he used his actual and correct email address, all was well. Those instructions were written more for internal IT use, I guess."

Not One Word

This IT pilot fish is on assignment in a foreign country to integrate a new subsidiary into the corporate systems. "Policy was to send out notifications for almost all outages via email so the clients would know what was going on, though I suspect most of them didn't care about – or pay much attention to – the many notifications," says fish. "It was the boy-who-cried-wolf syndrome. One day, the email system went down and in the midst of the crisis, the local manager I was reporting to came over and asked me to send out a notification. I just looked at him. And after a few seconds he walked away without saying a word."

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OPINION

SCOT FINNIE

Where Will IT Be in 5 Years?

IT predictions tend to feature forecasts in which the big trend of the day completely changes IT.

WITH COMPUTERWORLD celebrating its 45th birthday this year, I got to thinking: What will the state of IT be in five years?

One of the things I've noticed about IT predictions, especially as long as five years out, is that they tend to be two-dimensional, featuring forecasts in which the big trend of the day takes over and completely changes IT, often in earth-shattering ways. But the future is rarely so clear-cut. Trends often interact and move things in unexpected directions.

A key force shaping IT today has roots in the early aughts, when corporations realized that it is possible to buy too much IT. Information technology can't deliver endless productivity gains. As a result, IT budgets have been watched more closely, especially over the past five years. Five years from now, successful IT organizations won't just be cost centers. (They also won't be steeped in the "culture of no.") While IT budgets are apt to grow near term, I don't see any significant letup in the focus on limiting technology costs.

Another underlying trend is that technology is not just a tool that serves workers, like an IBM Selectric. Technology has become the lifeblood of business. It's in every department and branch of most companies. In many cases, it's the key factor in differentiating a business from its competitors. It's very difficult for a CIO and his or her team to make savvy, business-oriented recommendations about technology to every department in their organizations. One way or another, companies will need to find people who merge technical knowledge with an insider's understanding of business needs.

As I see it, there are two types of IT. Five years from now, the underlying influences and enabling trends that are coming to the fore — like virtualization, cloud, Web-based apps, social, mobile, consumerization and outsourcing — will separate IT into two chunks. The "central" part of IT will administer to the needs of the entire organization. Think of areas like security, the help desk, network and systems management, and at least some data center functions.

The other half of IT — think of it as data and applications — will be pushed out to line-of-business areas. Will embedded IT people be managing this technology? Will technically oriented business people emerge to manage it? Both things will happen. It's already beginning in forward-focused companies.

Virtualization and cloud computing will underpin many of these applications. But cloud isn't a major force destined to dominate all aspects of IT. It's a tool like any other; it will be harnessed for some applications but not others. Similarly, mobile isn't a major new wave of IT; it's a major new customer usage pattern making a short-term management demand of IT.

What will the organizational structure of IT look like in 2017? Even at the speed of technology, change is gradual and asynchronous. When you're talking about changes to business, different companies change in different ways.

At the heart of the question is a touchy subject: What happens to the CIO? My guess is that for some companies, the term *CIO* begins to disappear. At the same time, other companies may embrace their CIOs, whose most important direct reports may be deputy CIOs who are partnered with specific lines of business.

Agree or disagree? Let me know what you think the future will bring. ◆

Scot Finnie is *Computerworld's* editor in chief. You can contact him at sfinnie@computerworld.com and follow him on Twitter (@ScotFinnie).

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